RDMS DocID 00100502

January 22, 2002 Loureiro Engineering Associates, Inc.

United States Environmental Protection Agency
New England
One Congress Street
Suite 1100 (HBT)
Boston, MA 02114-2023

Pratt & Whitney
CTD910672081
R1
RDMS # 100502

Attn.: Mr. Juan A. Perez
Ms. Kim Tisa

RE: November 2000 Remedial Action Work Plan, Revised December 2001
Willow Brook and Willow Brook Pond
Response to January 16, 2002 EPA Comments

Dear Mr. Perez and Ms. Tisa:

We have prepared this letter on behalf of our client, United Technologies Corporation, Pratt & Whitney Division (UTC/P&W), to provide responses to each of the comments raised by the United States Environmental Protection Agency (US EPA) in a January 16, 2002 telephone conversation with regard to the *Remedial Action Work Plan, Revised December 2001 (RAWP).*

This letter is formatted to provide each of the comments as conveyed via telephone, followed by the response to the comment in italics. Submitted with this letter is one copy of the revised pages from the RAWP that have been edited in accordance with the responses provided. Please substitute this revised material for the text and tables included in your existing RAWP. In addition and in response to EPA concerns, the Standard Operating Procedure (SOP) for Concrete Chip Sampling has been revised and is included for inclusion into Appendix B of your existing RAWP.

1. Page 17, 3rd complete paragraph, last sentence - P&W removed the original reference for decontamination of water and incorporated the reference with decontamination of field sampling equipment. This is incorrect. The correct citation for decontamination of field sampling equipment is §761.79(c).

The RAWP has been revised for accuracy. The revised page is included in Attachment 1.

2. EPA noted that the SOP for Concrete Chip Sampling provided in the RAWP varies from the EPA guidance SOP for the same. Specifically, EPA is concerned about the allowable depth of concrete sampling. EPA would prefer to see a maximum depth ½ inch specified in the SOP. In addition, EPA requested a description detailing the laboratory procedures associated with sample processing to ensure homogeneity of the sample.

The LEA SOP for Concrete Chip Sampling has been revised to specify a ½ inch maximum sample depth and to present the laboratory procedures for sample processing. A copy of the revised SOP has been provided in Attachment No. 2.

3. EPA will accept the use of aqueous PE samples for laboratory performance evaluations as proposed in the RAWP. However, EPA wanted to clarify that solid PE samples are currently available with a reasonable acceptance range.

This point is acknowledged. However, LEA is concerned that the ability to provide a true double blind PE sample is questionable due to the processed nature or synthetic appearance of these solid PE samples. The aqueous PE samples allow us to duplicate the trip and equipment blanks more readily and thereby achieve a double blind objective.

4. EPA requested that the word "concrete" be added to the sample media column of Table 4-1 to clarify that the said laboratory analytical methods listed apply to soil/sediment and concrete.

Table 4-1 has been revised to include concrete in the sample media column. The revised table is included in Attachment 1.

5. The revised RAWP proposes evaluation of discrete wipe sampling data for non-porous sampling against the RA objective of 100 µg/100 cm^2 in areas to be capped and 10µg/100 cm^2 in uncapped areas (pg. 34). EPA expressed a concern regarding application of this approach to a drain pipe (for example), where water could potentially flow in or out of a restricted area.

The RAWP has been revised to exclude the 100 µg/100 cm^2 criteria for all such cases. Conduits or pipes located within capped areas, which bridge into uncapped areas will be assessed against the 10 µg/100 cm^2 criteria. The revised page is included in Attachment 1.

We hope that the above responses and the attached revised materials adequately address your comments and meet with your satisfaction. We herein request that you concur with this submittal and respond to UTC in writing. Should you have any further questions or comments, please do not hesitate to contact Lauren Levine of UTC at (860) 728-6520 or me.

Sincerely

LOUREIRO ENGINEERING ASSOCIATES, INC.

George F. Andrews Jr., P.E.
Senior Project Manager

Attachments

cc: Lauren Levine, UTC
Richard Hathaway, DEP
Elsie Patton, DEP, w/o enclosure and attachments
Lori Saliby, DEP, w/o enclosure and attachments
Melissa Toni, DEP, w/o enclosure and attachments
Cori Rose, ACOE, w/o enclosure and attachments
Ernest Waterman, U.S. EPA, w/o enclosure and attachments

Attachment 1

Revised RAWP Cover Sheet
Revised Page 17 of RAWP
Revised Page 34 of RAWP
Revised Table 4-1 of RAWP

REMEDIAL ACTION WORK PLAN

United Technologies Corporation
Pratt & Whitney
Willow Brook and Willow Brook Pond
East Hartford, CT

November 2000

Revised January 2002

Prepared for

UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY
400 Main Street
East Hartford, CT 06018

Prepared by

LOUREIRO ENGINEERING ASSOCIATES, INC.
100 Northwest Drive
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LEA Comm. No 88UT002

Clearing and Grubbing

The area in the immediate vicinity of Willow Brook and Willow Brook Pond is covered with a variety of vegetation, including the wetland areas (see Drawing 2-1). Vegetation ranges from mowed grass to mature trees. To gain access to perform the planned excavation activities, clearing and grubbing will be required. Cutting, processing, and appropriate disposal of heavy vegetation will be a component of the project. It is anticipated that stumps from trees located in areas known or suspected to be impacted by PCBs or other constituents will be disposed of at an offsite facility as PCB remediation waste. The remainder of the woody debris will be shipped offsite for volume reduction and/or disposal as a solid waste in accordance with the State of Connecticut Solid Waste Management Regulations.

Decontamination Facilities

Contractor equipment that has been in contact with contaminated soil and sediment will require decontamination prior performing work in an uncontaminated area or demobilization from the site. A decontamination pad or pads will be strategically located at the site adjacent to excavations and vehicle loading areas. Potential locations for decontamination facilities are shown on Drawing 2-1. The decontamination pad or pads will generally be constructed of a wood frame or similar materials, lined with heavy plastic, and include a layer of open stone. Equipment that has come into contact with contaminated soil and sediment will be cleaned with a pressure washer, scrub brushes and organic solvent using a double wash/rinse process in accordance with Subpart S of 40 CFR Part 761 over the decontamination pad.

Durable field sampling equipment (e.g., stainless steel trowels, plastic scoops, shovels, etc.) used to implement the Field Sampling and Analysis Plan will be decontaminated prior to each sample location to mitigate the potential for cross-contamination of samples collected for laboratory analysis. Decontamination will be performed in accordance with Standard Operating Procedures (SOP) provided as Appendix B and in accordance with 40 CFR Part 761.79(c).

Wash water and detergents used in the decontamination process will be disposed of following pretreatment through a mobile water treatment system (described in more detail later in this document) to the sanitary sewer in accordance with the terms and conditions of the CTDEP General Permit for the Discharge of Groundwater Remediation Wastewater or to the Connecticut River following treatment through the P&W Colt Street Industrial Wastewater Treatment Facility in accordance with the terms and conditions of the Temporary Authorization granted by the CTDEP. The terms and conditions of the General Permit require removal of PCBs to a concentration of 1 µg/L and the terms and conditions of the Temporary Authorization require the removal of PCBs to a concentration of 0.5 µg/L prior to discharge to the Colt Street facility.

Site Security

Limiting access to the site during construction will be accomplished thorough the use of both existing and permanent fencing (refer to Drawing 2-1 and Figure 2-2), along the north side of Willow Brook and Willow Brook Pond, and temporary construction fencing to be installed along Willow Street. The fencing will be supplemented by the use of security personnel to ensure that unauthorized persons do not access the construction site during remediation activities.

attached schematic layout of composite sample locations (Drawing 4-1). Similarly, wipe sampling has not been specifically defined in number in Tables 4-1 or 4-2, however, the need for wipe sampling is acknowledged by the inclusion into the overall confirmatory sampling requirements.

Evaluation of the discrete sampling data for PCBs would be based upon a direct comparison of the wipe sample data to the RA objective of 100 $\mu g/100\ cm^2$ for all non-porous materials in all areas to be capped and 10 $\mu g/100\ cm^2$ for all non-porous materials located in uncapped areas. Land use restrictions for access, as necessary, will be required in these areas. Conduits or pipes located within capped areas, which bridge into uncapped areas will be assessed against the 10 $\mu g/100\ cm^2$ criteria.

Soil/Sediment Sample Collection

Procedures for collecting post-excavation PCB confirmatory soil/sediment composite samples are presented as follows:

- Soil/sediment will be collected from each of the discrete sampling locations through the use of a calibrated disposable syringe. One syringe will be used for each composite sample unless the integrity of the syringe is questionable or it becomes clogged. The individual grab samples will be used to form a single composite sample in the field.
- Each aliquot will be examined for the presence or likelihood of free liquid. If these features appear, the aliquot(s) will be allowed to "rest" so that any free water can be decanted prior to compositing. In such cases, dedicated syringes will be used to facilitate timely completion of the sampling task.
- The aliquots will be composited and mixed thoroughly in the laboratory-supplied glassware.
- At the laboratory, a final sample, of sufficient weight and volume will be collected from the composite and then extracted and analyzed for the PCBs in accordance with the EPA methods described in Tables 4-1 and 4-3.
- A second portion of the sample will be weighed out at the same time as the portion to be used for analytical determination. This portion will be weighed, oven-dried and used to calculate the percent dry weight of the sample. The oven-dried aliquot will not be extracted or used for analytical determination.

Procedures for collecting vertical and lateral limit confirmatory grab soil samples (constituents other than PCBs) are presented as follows:

- Soil will be collected from each of the discrete sampling locations. The individual grab samples will not be used to form a composite sample.
- A sample, of sufficient weight and volume will be obtained from the sample container, extracted and analyzed to represent the post-excavated confirmatory soil present.
- Samples for VOC analysis will be collected in accordance with SW-846 Method 5035.
- A second portion of the sample will be weighed out at the same time as the portion to be used for analytical determination. This portion will be weighed, oven-dried and used to calculate the percent dry weight of the sample. The oven-dried aliquot will not be extracted or used for analytical determination.

Soil/sediment samples shall be collected using disposable sampling equipment or decontaminated spatulas, split-spoon samplers, augers or an equivalent. All disposable components of a sampling device will be disposed of prior to sample collection and all fixed components of a sampling device will be decontaminated prior to sample collection. The materials and procedures to collect post-excavation confirmatory soil/sediment samples are presented below.

Table 4-1

Willow Brook and Willow Brook Pond
East Hartford, Connecticut

Field Sampling Plan
Confirmatory Sampling Summary

Sample Type	Sample Media	Anticipated Number of Samples	Laboratory Analytical Methods (USEPA)
Confirmatory	Soil/Sediment/ Concrete	197	SW846-8082, Rev. December 1996 (PCB)
Confirmatory	Soil/Sediment/ Concrete	76	SW-846-8260B Rev. December 1996 (VOC) SW-846-8270C Rev. December 1995 (SVOC) SW-846-1312 Rev. September 1994 (SPLP) SW-846-6010B Rev. December 1996 (ICP Metals) SW-846-7010 Rev. January 1998 (GFAA Metals) SW-846-7471A Rev. January 1998 (Mercury–Cold Vapor) SW-846-9012A Rev. December 1996 (Cyanide) TPH 418.1
Disposal/ Characterization (Possible Methods Required By Disposal Facility)	Soil/Sediment/ Concrete	24 or As Required by Disposal Facility	SW-846-8082, Rev. December 1996(PCB) SW-846-8260B Rev. December 1996 (VOC) SW-846-8270C Rev. December 1995 (SVOC) SW-846-1312 Rev. September 1994 (SPLP) SW-846-6010B Rev. December 1996 (ICP Metals) SW-846-7010 Rev. January 1998 (GFAA Metals) SW-846-7471A Rev. January 1998 (Mercury–Cold Vapor) SW-846-9012A Rev. December 1996 (Cyanide) TPH 418.1 SW-846-8081A Rev. December 1996 (Pesticides) SW-846-8151A Rev. December 1996 (Herbicides)
Temporary Wastewater Treatment System Effluent	Wastewater	As Required By Permit	VOC: EPA-601 and 602 plus xylenes or EPA624 MTBE: EPA-602 or EPA-624 TPH: EPA 418.1 Metals: EPA-200.7, 239.1 or 239.2 BNA: EPA-625 PAH: EPA-610 PCBs: EPA-608 Cyanide: EPA-335.1; 335.2

Notes:

1. Samples are collected from an interval of 0 to 6 inches below post-remediation surface.
2. PCB = Polychlorinated Biphenyls; SVOC = Semi-Volatile Organic Compounds; VOC = Volatile Organic Compounds; SPLP = Synthetic Precipitate Leachate Procedure; ICP = Inductively Coupled Plasma; TPH = Total Petroleum Hydrocarbons; MTBE = Methyl tertiary butyl ether; BNA = Base Neutral and Acid Extractables; PAH = Polynuclear Hydrocarbons; GFAA = Graphite Furnace Atomic Absorption Spectrometry
3. USEPA = United States Environmental Protection Agency
4. Confirmatory concrete sampling and wipe sampling of non-porous materials may be necessary. The number of respective samples will be quantified once the subject areas are unearthed

Attachment 2

Revised SOP for Concrete Chip Sampling

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Concrete Chip Sampling

Willow Brook and Willow Brook Pond
PCB Remediation

SOP ID: 10001W
Date Initiated: 01/17/02

Approved By: _____ 1/18/02

David Lehnus **Date**
Senior Geologist

_____ 1/18/02

Nick D. Skoularikis **Date**
Director of Quality

REVISION RECORD

Rev #	Date	Additions/Deletions/Modifications
Initial Issue	01/17/02	Based on LEA SOP 10001, initiated on 02/20/90

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Concrete Chip Sampling
Willow Brook and Willow Brook Pond
PCB Remediation

1. Purpose and Scope

This document discusses procedures for collecting concrete chip samples for analysis. The procedures outlined in this document have been developed to produce reproducible results. Associated standard operating procedures (SOPs) that should be consulted include the Loureiro Engineering Associates (LEA) *SOP for Quality Assurance/Quality Control Measures for Field Activities* and *SOP for Soil Sampling.*

2. Definitions

2.1. Concrete chip sample: Concrete sample taken no deeper than ½ inch from surface to be sampled. The LEA Information Management System (LEAIMS) sample class used for concrete chip samples is "CC".

3. Equipment

3.1. Equipment required for sampling of concrete shall include:

3.1.1. Dixon lumber crayon or equivalent.

3.1.2. 100 foot tape.

3.1.3. Three decontamination wash buckets.

3.1.4. Sample collection bottles and labels.

3.1.5. Sample forms.

3.1.6. Clean disposable gloves.

3.1.7. Personal protective equipment.

3.1.8. Cooler, cold packs and maximum/minimum thermometer.

3.1.9. Alconox®/Liquinox® detergent, 10 percent methanol solution in water (v:v), 10 percent nitric acid solution in water (v:v), hexane, distilled water.

3.1.10. Brushes.

3.1.11. Spatulas.

3.1.12. Indelible marker.

3.1.13. Distilled water.

3.1.14. Hand towels.

3.1.15. Impact drill with stone chisel.

3.1.16. Nail punch.

3.1.17. Clear polyethylene plastic sheeting.

3.1.18. Three pound hammer.

3.1.19. Fifty-foot electrical extension cord.

3.1.20. One-inch adjustable crescent wrench.

3.1.21. Lined 55 gallon drums.

3.1.22. Ohaus weighing scale or equivalent.

3.1.23. Non-shrinking concrete.

3.1.24. Portable Volatile Organic Compound (VOC) Analyzer (Photovac MicroTip, Foxboro OVA, or equivalent)

4. Procedure

4.1. Sample Location

The location selection will be based on project-specific requirements. A grid pattern may be used (random sampling) or an inspection of the concrete surface will be performed to determine the location of cracks or discoloration on the concrete (judgmental sampling). In certain projects both random and judgmental samples are being collected. If a grid is being used, the location of each node of the grid pattern shall be determined and marked.

4.2. Sample Collection

Prior to sample collection, all sample bottles will be labeled using indelible ink with the following information: Sample number, date, area location, collector of sample.

4.2.1. Personal protection during all concrete chip sampling shall be at a minimum level D (unless a more stringent level is required by site-specific conditions), including but not limited to eye protection, work boots, and gloves. Full-face respirators, Tyvek® overalls and rubber gloves will be available on-site for use if deemed necessary by the field supervisor or sampling personnel.

4.2.2. The collection of concrete samples shall be in accordance with the following procedures:

4.2.2.1. An impact drill equipped with a stone chisel shall be inserted through the center of a five-foot square section of plastic sheeting (to limit the dispersion of dust during sample collection). If sidewall samples are collected, a five-foot square section of plastic will be placed on the floor at the base of the wall.

4.2.2.2. Samples shall be obtained by chipping of the concrete surface to a maximum depth of one-half inch, collecting a minimum of 200 grams of sample.

4.2.2.3. Samples shall be placed into the appropriate pre-labeled sample bottle, the time of collection noted on the label, and the sample bottle placed into a cooler.

4.2.2.4. All pertinent sampling data forms and chain of custody forms shall be completed.

4.2.2.5. All sampling equipment shall be decontaminated in accordance with Equipment Decontamination Procedures (Section 4.3) and the plastic sheeting discarded into a lined 55-gallon drum for disposal.

Steps 4.2.2.1 – 4.2.2.5 shall be repeated for each concrete sample to be collected.

4.2.3. Prior to sample analysis, the laboratory will grind the entire sample volume to powder and mix it to ensure a homogeneous composition.

4.2.4. Collection of field generated quality assurance/quality control (QA/QC) samples shall adhere to all applicable procedures noted in *SOP for Quality Assurance/Quality Control Measures for Field Activities* and should include the following procedures:

4.2.4.1. Field blanks/equipment blanks should be collected for each sample bottle/preservation technique/analysis procedure at the rate of one per day.

4.2.4.2. Field duplicates/replicate samples (or collected samples for volatile organic compounds) should be obtained for each sample bottle/preservation technique/analysis procedure at the rate of one per sampling event or one for every 20 samples.

4.2.4.3. Trip blanks for volatile organic compound analysis shall be collected at the rate of one per day or one per twenty samples collected.

4.2.5. Upon completion of each day, a field data collection quality review checklist shall be completed, as noted in the *Standard Operating Procedure for Quality Assurance/Quality Control Measures for Field Activities (*SOP # 10005).

4.3. Equipment Decontamination Procedures

4.3.1. All sampling equipment shall be decontaminated before each sample collection.

4.3.2. Decontamination of the sampling equipment shall adhere to the following procedures:

4.3.2.1. All excess loose concrete and debris shall be removed from the sampling equipment and placed into the 55-gallon drum.

4.3.2.2. Sampling equipment shall then be immersed in an Alconox®/Liquinox® and tap water solution and scrubbed to remove all debris.

4.3.2.3. The order of decontamination solutions is as follows:

1. Detergent scrub.
2. Deionized (DI) water rinse.
3. Hexane rinse.
4. DI water rinse.

5. 10 percent nitric acid rinse.
6. DI water rinse.
7. 10 percent methanol rinse.
8. Air dry.

4.3.3. An alternative to the procedure described above requires that the equipment be cleaned using a high-pressure wash and steam cleaning. Alternative methods of cleaning may be more appropriate for an individual piece of equipment for site conditions based upon knowledge of site contaminants, and may be used at the discretion of the LEA representative.

4.3.4. At the end of the project day, all used equipment shall be decontaminated. Dispose of all spent decontamination solutions in accordance with all applicable municipal, state and federal regulations.

4.4. Field Documentation

4.4.1. The following general information shall be recorded in the field forms:

- Site identification, LEA commission number.
- Site location.
- Name of recorder.
- Identification of concrete chip sample name and location (include sketch; concrete chip sample class is "CC").
- Collection method.
- Date and time of collection.
- Types of sample containers used, sample identification numbers and QA/QC sample identification.
- Preservative(s) used.
- Parameters requested for analysis.
- Field analysis method(s).
- Field observations during sampling event.
- Name of collector.
- Climatic conditions including ambient temperature.
- Internal temperature of field and shipping (iced) containers.
- Chronological events of the day.
- QA/QC data.
- A complete sample description (e.g. visual observations, discoloration, etc.).

4.4.2. The following information shall be recorded on the Field Quality Review Checklist:

- Reviewers name, date, and LEA commission number.
- Review of all necessary site activities and field forms.
- Statement of corrective actions for deficiencies.

4.4.3. The following information shall be recorded on the chain of custody record:

- Client's name and location.
- Date and time of collection.
- Sample number.
- Container type, number, size.
- Preservative used.
- Signature of collector.
- Signatures of persons involved in the chain of possession.
- Analyses to be performed.

4.4.4. The following information shall be provided on the sample label using an indelible pen:

- Sample identification number.
- Name of collector.
- Date and time of collection.
- Place of collection.
- Parameter(s) requested (if space permits).

4.4.5. The following information shall be recorded on the sample collection data sheet:

- Client name, location and LEA commission number.
- Date and time of collection.
- Sample number.
- Depth sample was obtained, as applicable.
- VOC reading.

5. Quality Assurance/Quality Control

5.1. All procedures documented in this SOP should be conducted to ensure quality and in accordance with LEA's *SOP for Quality Assuarance/Quality Control Measures for Field Activities* (SOP ID 10005)

6. References

Other sampling procedures which may be pertinent to concrete chip sampling may be found in LEA SOP 10006, *Standard Operating Procedures for Soil Sampling.*

END OF DOCUMENT